CLAIMS

What is claimed is:

1. A field-installable connector, comprising:

a connector housing;

a ferrule having front and rear opposed faces and at least one fiber bore defined longitudinally therethrough; and

a stub optical fiber having a laser processed endface disposed within the at least one fiber bore of the ferrule and extending a predetermined distance outwardly beyond the rear face.

2. The field-installable connector of claim 1 further comprising:

an alignment feature operable for aligning the laser processed endface of the stub optical fiber with an endface of a field optical fiber;

a ferrule holder defining a lead-in tube operable for guiding the field optical fiber into the alignment feature; and

a means for mechanically splicing the stub optical fiber and the field optical fiber.

3. The field-installable connector of claim 1, wherein the stub optical fiber having a laser processed endface replaces a mechanically cleaved stub optical fiber in a mechanical splice.

4. The field-installable connector of claim 1, wherein the laser processed endface comprises a laser cut end of the stub optical fiber.

5. The field-installable connector of claim 1, wherein laser processing comprises a dome shaped end of the stub optical fiber.

6. The field-installable connector of claim 1, further comprising a biasing element operable for permitting the ferrule to float longitudinally within the connector housing.

7. The field-installable connector of claim 1, wherein the stub optical fiber having a laser processed endface is produced by the process comprising rotating the optical fiber while sweeping a laser beam back and forth at a selected angle across the rotating optical fiber, wherein the laser processing is achieved by impinging an amount of a predetermined laser energy onto the stub optical fiber.

8. The field-installable connector of claim 1, wherein the stub optical fiber having a laser processed endface comprises a protruding fiber core.

9. The field-installable connector of claim 1, wherein the stub optical fiber having a laser processed endface extends outwardly beyond the rear face of the ferrule a distance from about 5 mm to about 8 mm.

10. The field-installable connector of claim 1, further comprising a rubber boot positioned over a rear of the field-installable connector, the rubber boot operable for sealing and protecting the field-installable connector and limiting a bend radius of the field optical fiber.

11. A method of fabricating a field-installable connector adapted to be mechanically spliced to a field optical fiber, comprising:

rotating a stub optical fiber secured within a ferrule of the field-installable connector; and

laser processing the stub optical fiber to create an endface by sweeping a laser beam directed at a preselected angle from perpendicular to a longitudinal axis of the stub optical fiber back and forth across a surface of the rotating stub optical fiber.

12. The method of claim 11;

wherein an oscillating motion of the laser is driven by an intermittent sinusoidal signal resulting in at least one deposit of energy onto the stub optical fiber followed by a cooling period before a subsequent deposit of energy occurs; and

wherein a pulse duration and a laser energy are predetermined so that the stub optical fiber is progressively ablated without re-depositing ablated material or distorting the geometry of the remaining stub optical fiber.

13. The method of claim 11, wherein the preselected angle ranges from about 10° to about 60° from perpendicular to the longitudinal axis of the stub optical fiber.

14. The method of claim 11, wherein the preselected angle ranges from about 25° to about 35° from perpendicular to the longitudinal axis of the stub optical fiber.

15. The method of claim 11, wherein the laser is focused to a spot size that is slightly larger than the diameter of the stub optical fiber.

16. The method of claim 11, wherein the stub optical fiber is positioned from about 2 to about 2.5 fiber widths downward from an uppermost peak of a sinusoidal laser path and about 8 to about 10 fiber widths upward from a dwell position of the laser.

17. The method of claim 11, wherein the step of laser processing the stub optical fiber is achieved by impinging an amount of laser energy at a preselected laser intensity in the form of a Gaussian intensity distribution onto the stub optical fiber.

18. The method of claim 11, wherein the step of laser processing the stub optical fiber creates a dome shaped endface having a protruding fiber core.

19. A field-installable connector produced according to the method of claim 11.

20. A method of laser processing an optical fiber, comprising:

rotating the optical fiber; and

sweeping a beam of a laser directed at a preselected angle from perpendicular to a longitudinal axis of the optical fiber back and forth across a surface of the rotating optical fiber;

wherein the laser is operated in a continuous mode;

wherein an oscillating motion of the laser is driven by an intermitting sinusoidal signal resulting in two deposits of energy onto the optical fiber followed by a cooling period before subsequent deposits of energy occur; and

wherein a pulse duration and an energy intensity of the laser are preselected so that the optical fiber is progressively ablated without re-depositing ablated material or distorting the geometry of the remaining optical fiber.

21. The method of claim 20, wherein the preselected angle ranges from about 10° to about 60°.

22. The method of claim 20, wherein the preselected angle ranges from about 25° to about 35°.

23. The method of claim 20, wherein the step of sweeping a laser creates a dome shaped endface having a protruding fiber core on the optical fiber.